

PROCESS FOR ESTABLISHING A SET OF RADIOLOGICAL, NUCLEAR, AND PROCESS SAFETY STANDARDS AND REQUIREMENTS FOR THE RPP WASTE TREATMENT PLANT CONTRACTOR



**U.S. Department of Energy
Office of River Protection
Richland, Washington**

February 2001

Preface

As directed by Congress in Section 3139 of the *Strom Thurmond National Defense Authorization Act for Fiscal Year 1999*, the U.S. Department of Energy (DOE) established the Office of River Protection (ORP) at the Hanford Site to manage the River Protection Project (RPP), formerly known as the Tank Waste Remediation System. ORP is responsible for the safe storage, retrieval, treatment, and disposal of the high level nuclear waste stored in the 177 underground tanks at Hanford.

The initial concept for treatment and disposal of the high level wastes at Hanford was to use private industry to design, construct, and operate a Waste Treatment Plant (WTP) to process the waste. The concept was for DOE to enter into a fixed-price contract for the Contractor to build and operate a facility to treat the waste according to DOE specifications. In 1996, DOE selected two contractors to begin design of a WTP to accomplish this mission. In 1998, one of the contractors was eliminated, and design of the WTP was continued. However, in May 2000, DOE chose to terminate the privatization contract and seek new bidders under a different contract strategy. In December 2000, a team led by Bechtel National, Inc. was selected to continue design of the WTP and to subsequently build and commission the WTP.

A key element of the River Protection Project Waste Treatment Plant (RPP-WTP) is DOE regulation of safety through a specifically chartered, dedicated Office of Safety Regulation (OSR). The OSR reports directly to the ORP Manager. The regulation by the OSR is authorized by the document entitled *Policy for Radiological, Nuclear, and Process Safety Regulation of the River Protection Project Waste Treatment Plant Contractor* (DOE/RL-96-25) (referred to as the Policy) and implemented through the document entitled *Memorandum of Agreement for the Execution of Radiological, Nuclear, Process Safety Regulation of the RPP-WTP Contractor* (DOE/RL-96-26) (referred to as the MOA). These two documents provide the basis for the safety regulation of the RPP-WTP at Hanford.

The foundation of both the Policy and the MOA is that the mission of removal and immobilization of the existing large quantities of tank waste by the RPP-WTP Contractor must be accomplished safely, effectively, and efficiently.

The Policy maintains the essential elements of the regulatory program established by DOE in 1996 for the privatization contracts. The MOA clarifies the DOE organizational relationships and responsibilities for safety regulation of the RPP-WTP. The MOA provides a basis for key DOE officials to commit to teamwork in implementing the policy and achieve adequate safety of RPP-WTP activities.

The Policy, the MOA, the RPP-WTP Contract and the four documents incorporated in the Contract define the essential elements of the regulatory program being executed by the OSR. The four documents incorporated into the Contract (and also in the MOA) are as follows:

Concept of the DOE Process for Radiological, Nuclear, and Process Safety Regulation of the RPP Waste Treatment Plant Contractor, DOE-96-0005,

DOE Process for Radiological, Nuclear, and Process Safety Regulation of the RPP Waste Treatment Plant Contractor, DOE/RL-96-0003,

Top-Level Radiological, Nuclear, and Process Safety Standards and Principles for the RPP Waste Treatment Plant Contractor, DOE/RL-96-0006, and

Process for Establishing a Set of Radiological, Nuclear, and Process Safety Standards and Requirements for the RPP Waste Treatment Plant Contractor, DOE/RL-96-0004.

DOE patterned its safety regulation of the RPP-WTP Contractor to be consistent with the concepts and principles of good regulation (stability, clarity, openness, efficiency, and independence) used by the Nuclear Regulatory Commission (NRC). In addition, the DOE principles of integrated safety management were built into the regulatory program for design, construction, operation, and deactivation of the facility. The regulatory program for nuclear safety permits waste treatment services to occur on a timely, predictable, and stable basis, with attention to safety consistent with that which would occur from safety regulation by an external agency. DOE established OSR as a dedicated regulatory organization to be a single point of DOE contact for nuclear safety oversight and approvals for the WTP Contractor. The OSR performs nuclear safety review, approval, inspection, and verification activities for ORP using the NRC principles of good regulation while defining how the Contractor shall implement the principles of standards-based integrated safety management.

A key feature of this regulatory process is its definition of how the standards-based integrated safety management principles are implemented to develop a necessary and sufficient set of standards and requirements for the design, construction, operation, and deactivation of the RPP-WTP facility. This process closely parallels the DOE necessary and sufficient closure process (subsequently renamed Work Smart Standards process) in DOE Policy 450.3, *Authority for the Use of the Necessary and Sufficient Process for Standards-based Environment, Safety and Health Management*, and is intended to be a DOE approved process under DOE Acquisition Regulations, DEAR 970.5204-78, *Laws, Regulations and DOE Orders*, Section (c). DOE approval of the contractor-derived standards is assigned to the OSR.

The RPP-WTP Contractor has direct responsibility for WTP safety. DOE requires the Contractor to integrate safety into work planning and execution. This integrated safety management process emphasizes that the Contractor's direct responsibility for ensuring that safety is an integral part of mission accomplishment. DOE, through its safety regulation and management program, verifies that the Contractor achieves adequate safety by complying with approved safety requirements.

All documents issued by the Office of Safety Regulation are available to the public through the DOE Public Reading Room at the Consolidated Information Center, Washington State University, Room 101L, Richland, Washington. Copies may be purchased for a duplication fee.

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PROCESS FOR ESTABLISHING A SET OF RADIOLOGICAL, NUCLEAR, AND PROCESS SAFETY STANDARDS AND REQUIREMENTS FOR THE RPP WASTE TREATMENT PLANT CONTRACTOR

1.0 PURPOSE

The purpose of this document is to describe the process that the River Protection Project Waste Treatment Plant (RPP-WTP) Contractor (Contractor) shall use to develop and recommend a set of radiological, nuclear, and process safety standards and requirements. Employing this process will produce a standards set, to be recommended by the Contractor Representative(s) for approval consideration by the Safety Regulation Official (SRO), that will serve as a basis for issuance of an approved Safety Requirements Document (SRD), as a condition of the Contract. The approved SRD sets forth the requirements with which the Contractor's activities must comply. The SRD shall also contain, as a subset, the nuclear safety requirements that are enforceable under 10 CFR 820, "Procedural Rules for DOE Nuclear Activities."

The process described herein will allow the Contractor and Office of Safety Regulation (OSR) to accomplish the first (i.e., standards approval) of six regulatory actions for the radiological, nuclear, and process safety regulation of the RPP-WTP Contractor. The details of this regulatory process are provided in DOE/RL-96-0003, *DOE Process for Radiological, Nuclear, and Process Safety Regulation of the RPP Waste Treatment Plant Contractor*.

2.0 BACKGROUND

The U.S. Department of Energy (DOE) intends to afford the Contractor significant flexibility in the exercise of the Contractor's responsibility to identify safety standards and requirements. The Contractor achieves adequate safety by the following:

1. Applying the integrated safety management process, which includes following this contractually prescribed process for requirements and standards selection
2. Complying with applicable laws and regulations (specifically DOE nuclear safety regulations 10 CFR 820, "Procedural Rules for DOE Nuclear Activities"; 10 CFR 830, "Nuclear Safety Management"; and 10 CFR 835, "Occupational Radiation Protection")
3. Conforming to top-level safety standards and principles specified within DOE/RL-96-0006, *Top-Level Radiological, Nuclear, and Process Safety Standards and Principles for the RPP Waste Treatment Plant Contractor*.

This concept of the Contractor's role in the identification of safety standards and requirements that apply to its activities is consistent with DOE/EH-0416, *Criteria for the Department's Standards Program*. DOE's Standards Program includes the following essential functions:

1. Identification of applicable standards
2. Justification of the adequacy of the applicable standards
3. Implementation of applicable standards
4. Administrative and management processes and infrastructure that support, deliver, and demonstrate standards-based work
5. An integrated approach to management of performance, independent of the source of the standard.

The process described in this document as applied to the RPP-WTP program addresses the first two essential functions.

There are eight Essential Process Steps included within the process for standards set identification for the RPP-WTP program. Within these steps, as appropriate to RPP-WTP, the concepts of DOE M 450.3-1, *The Department of Energy Closure Process for Necessary and Sufficient Sets of Standards*, have been applied.

3.0 STANDARDS PROCESS DESCRIPTION

This section describes the process that shall be used by the Contractor to produce a set of recommended radiological, nuclear, and process safety standards. A key feature of this process is that these standards for performance of work link directly to specific radiological, nuclear, and process hazards associated with that work. Additionally, the use of experts and participation by stakeholders will ensure credibility, completeness, and adequate protection of workers, the public, and the environment. Figure 1 depicts the essential process steps and shows that DOE has responsibility for providing the input and approving the output from the process, while the Contractor has responsibility for employing the process.

Standards Approval was initially accomplished during Part A of the TWRS-P Project. Portions of the Standards Approval package (SRD, significant or bounding hazards described in the Hazard Analysis Report [HAR], and implementing standards from the SRD described in the Integrated Safety Management Plan [ISMP] or the Initial Safety Assessment [ISA] remain as part of the authorization basis. The Standards Process description is maintained to show the process that was used by the Contractors and by the OSR for this regulatory submittal.

3.1 Steps of the Process

Table 1 lists the steps of the process necessary to develop a recommended set of radiological, nuclear, and process safety standards. The essential process steps listed in the first column shall be performed by the Contractor to ensure that the process is performed in a manner consistent with DOE's Standards Program. The second column identifies the individuals or groups of individuals who should perform these essential steps. The third column provides an approach for accomplishing each step that is acceptable to the OSR. Although the Contractor

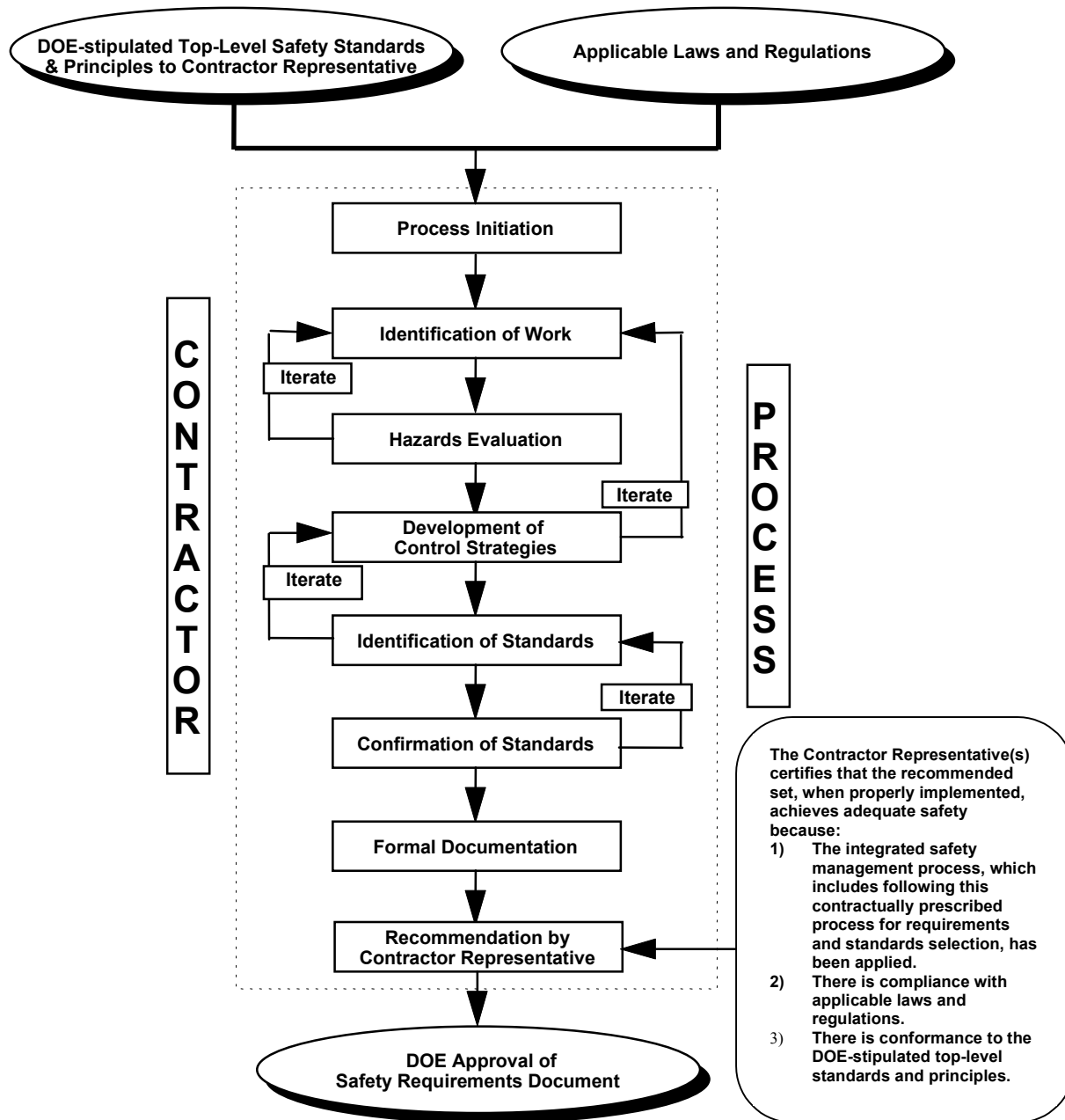


Figure 1. Process Steps to Develop Recommended Set

Representative(s) may deviate from the acceptable approach, the Contractor Representative(s) shall ensure that the process used meets the concepts of DOE M 450.3-1.

3.2 Stakeholder Input and Views

This process described herein invites and encourages stakeholders to express their views and provide input to the maximum extent possible, while recognizing the need to protect the proprietary information of the Contractor. Stakeholder input and views are important to ensuring

Table 1. Process to Develop Standards^(a)

Essential Process Step	Performers	Acceptable Approach
1. Process Initiation	<ul style="list-style-type: none"> ▪ CR ▪ PM ▪ PMT ▪ Stakeholders ▪ RM 	<ul style="list-style-type: none"> ▪ CR designates PM and PMT. ▪ CR provides charter and delegates authority to PM and PMT to implement this standards process. ▪ PM prepares implementation plan including team staffing requirements, team operating procedures, outputs required, documentation required. ▪ PM prepares rosters (candidates and credentials). ▪ PMT approves plans, rosters, and procedures. ▪ PM mobilizes the process activities. ▪ Stakeholders are invited and encouraged to provide input and express views to PM and PMT. ▪ RM attends any meetings that will facilitate early gathering of information on process
2. Identification of Work	<ul style="list-style-type: none"> ▪ PM ▪ DC ▪ WAE ▪ PMT ▪ RM 	<ul style="list-style-type: none"> ▪ PM manages the Step 2 activities. ▪ DC provides technical/contractual scope support. ▪ WAE define functional requirements. ▪ WAE define overall processes. ▪ WAE identify and describe key systems, structures, components, and operations. ▪ WAE document the work activities. ▪ PMT provides technical resource consultation. ▪ PM proposes additional experts as needed. ▪ PMT approves additional experts as needed. ▪ PMT monitors the Step 2 activities. ▪ RM attends any meetings that will facilitate early gathering of information on process.
3. Hazards Evaluation	<ul style="list-style-type: none"> ▪ PM ▪ WAE ▪ HAE ▪ PMT ▪ RM 	<ul style="list-style-type: none"> ▪ PM manages the Step 3 activities. ▪ WAE provide consultation on work elements. ▪ HAE identify and describe work hazards. ▪ HAE define a hazard assessment approach. ▪ HAE assess work hazards. ▪ HAE document the hazards assessment. ▪ PMT provides technical resource consultation. ▪ PM proposes additional experts as needed. ▪ PMT approves additional experts as needed. ▪ PMT monitors the Step 3 activities. ▪ RM attends any meetings that will facilitate early gathering of information on process.
4. Development of Control Strategies	<ul style="list-style-type: none"> ▪ PM ▪ WAE ▪ HAE ▪ HCE ▪ PMT ▪ RM 	<ul style="list-style-type: none"> ▪ PM manages the Step 4 activities. ▪ WAE provide consultation on work elements. ▪ HAE provide consultation on work hazards. ▪ HCE develops hazards control approaches. ▪ PMT provides technical resource consultation. ▪ PM proposes additional experts as needed. ▪ PMT approves additional experts as needed. ▪ PMT monitors the Step 4 activities. ▪ RM attends any meetings that will facilitate early gathering of information on process.

Essential Process Step	Performers	Acceptable Approach
5. Identification of Standards	<ul style="list-style-type: none"> ▪ PM ▪ WAE ▪ HAE ▪ HCE ▪ ESE ▪ PMT ▪ RM 	<ul style="list-style-type: none"> ▪ PM manages the Step 5 activities. ▪ WAE provide consultation on work elements. ▪ HAE provide consultation on work hazards. ▪ HCE provide consultation on hazards control approaches. ▪ ESE select appropriate standards based on the Steps 2, 3, and 4. ▪ ESE prepare justifications of standards selections. ▪ ESE/PM document the set of selected standards. ▪ PMT provides technical resource consultation. ▪ PM proposes additional experts as needed. ▪ PMT approves additional experts as needed. ▪ PMT monitors the Step 5 activities. ▪ RM attends any meetings that will facilitate early gathering of information on process.
6. Confirmation of Standards	<ul style="list-style-type: none"> ▪ PM ▪ CR ▪ IRT ▪ PMT ▪ Stakeholders ▪ RM 	<ul style="list-style-type: none"> ▪ PM manages the Step 6 activities. ▪ CR designates the IRT. ▪ PM facilitates IRT activities by providing documentation, information briefings, and discussion meetings. ▪ IRT defines its review/confirmation approach. ▪ IRT performs its review. ▪ IRT documents its approach and findings. ▪ IRT provides comments to the PM for revision of the set of selected standards and associated documentation. ▪ PMT monitors the Step 6 activities. ▪ Stakeholders invited and encouraged to provide input and express views to PM and PMT. ▪ RM attends any meetings that will facilitate early gathering of information on process.
7. Formal Documentation	<ul style="list-style-type: none"> ▪ PMT ▪ PM ▪ CR 	<ul style="list-style-type: none"> ▪ PMT verifies the overall process implementation. ▪ PM prepares draft of submittal required by the SRO. ▪ PMT reviews the draft submittal. ▪ PM recommends final submittal to CR. ▪ CR approves the final submittal.
8. Recommendation by CR	<ul style="list-style-type: none"> ▪ CR 	<ul style="list-style-type: none"> ▪ CR certifies the set of standards contained in the final submittal is adequate and provides submittal to the OSR.

(a) Acronyms:

CR = Contractor Representative(s)

DC = DOE Customer

ESE = environment, safety, and health standards experts

HAE = Hazards Assessment Experts

HCE = Hazards Control Experts

IRT = Independent Review Team

PM = Process Manager

PMT = Process Management Team

RM = Review Manager from OSR

WAE = Work Activity Experts

the overall integrity and fidelity of the process, as well as the qualifications of the process performers. Although a stakeholder cannot be a member of the process management or the independent review teams, the Contractor Representative(s) shall invite and encourage stakeholders to individually express their views and provide input in steps 1 and 6, i.e., process initiation and standards confirmation. Further guidance for the Contractor Representative(s) on obtaining stakeholder input can be obtained in DOE M 450.3-1.

3.3 Contractor's Recommendation and Certification

The recommendation of the standards set by the Contractor Representative(s) to the SRO constitutes a two-fold certification:

1. That the set, when properly implemented, will ensure adequate radiological, nuclear, and process safety by applying the integrated safety management process, which includes following this contractually prescribed process for requirements and standards selection; by complying with applicable laws and regulations; and by conforming to the DOE-specified top-level standards and principles
2. That this process was employed with integrity.

4.0 REFERENCES

10 CFR 820, "Procedural Rules for DOE Nuclear Activities," *Code of Federal Regulations*, as amended.

10 CFR 830, "Nuclear Safety Management," *Code of Federal Regulations*, as amended.

10 CFR 835, "Occupational Radiation Protection," *Code of Federal Regulations*, as amended.

29 CFR 1910.119, "Process Safety Management of Highly Hazardous Chemicals," *Code of Federal Regulations*, as amended.

DOE M 450.3-1, *The Department of Energy Closure Process for Necessary and Sufficient Sets of Standards*, U.S. Department of Energy, 1996.

DOE/EH-0416 *Criteria for the Department's Standards Program 1994*, U.S. Department of Energy, 1994.

DOE/RL-96-0003, *DOE Process for Radiological, Nuclear, and Process Safety Regulation of the RPP Waste Treatment Plant Contractor*, Rev. 2, U.S. Department of Energy, Office of River Protection, 2001.

DOE/RL-96-0006, *Top-Level Radiological, Nuclear, and Process Safety Standards and Principles for the RPP Waste Treatment Plant Contractor*, Rev. 2, U.S. Department of Energy, Office of River Protection, 2001.

5.0 LIST OF TERMS

CR	Contractor Representative(s)
DC	DOE customer
DOE	U.S. Department of Energy
ESE	environment, safety, and health standards experts

HAE	hazards assessment experts
HAR	Hazard Analysis Report
HCE	hazards control experts
IRT	Independent Review Team
ISA	Initial Safety Assessment
ISMP	Integrated Safety Management Plan
OSR	Office of Safety Regulation
PM	process manager
PMT	process management team
RM	review manager from OSR
RPP-WTP	River Protection Project Waste Treatment Plant
SRD	Safety Requirements Document
SRO	Safety Regulation Official
WAE	work activity experts

6.0 GLOSSARY¹

acceptable release: The release of radioactive material, within acceptable limits, to the environment.

anticipated operational occurrences: Conditions of normal operation expected to occur one or more times during the life of the facility and include, but are not limited to, loss of offsite power to the process activity within the facility.

Authorization Agreement: The document mutually agreed upon by the Office of River Protection Manager and a Contractor that specifies authorization terms and conditions.

authorization basis: The composite of information provided by a Contractor in response to radiological, nuclear, and process safety requirements that is the basis on which the DOE grants the Contractor permission to perform regulated activities.

back-fit: The addition, elimination, or modification of (1) structures, systems, or components of the facility or (2) procedures or organizations required to operate the facility after the construction authorization has been issued.

catastrophic release: A major uncontrolled chemical emission, fire, or explosion that presents serious danger to employees in the workplace.

co-located worker: An individual within the Hanford Site, beyond the Contractor-controlled area, performing work for or in conjunction with DOE or utilizing other Hanford Site facilities.

¹ Certain terms used in this document and listed in this glossary have origins in radiological and nuclear safety. Extension of their use to process safety may be useful but is not specified herein. It is expected that the extension of their use to process safety will be considered as part of the standards and requirements identification process.

common-cause failures: Dependent failures that are caused by a condition external to a system or set of components that make system or multiple component failures more probable than multiple independent failures.

common-mode failures: Dependent failures caused by susceptibilities inherent in certain systems or components that make their failures more probable than multiple independent failures due to those components having the same design or design conditions that would result in the same level of degradation.

Contractor: The company or companies selected to contract with DOE for construction and operation of the technologies and facilities necessary to retrieve, process tank waste, and deliver treated waste products to DOE for storage or disposal.

Contractor Representative(s): The organization manager(s), or duly appointed designee(s), who have direct Contract responsibility, accountability, and authority for directing or performing the River Protection Project Waste Treatment Plant work subject to the set of standards.

Contractor Representative(s) recommended set of standards and requirements: Those standards and requirements identified through a DOE-specified process and recommended by the Contractor Representative(s) as necessary assurance that work will be performed in a manner that protects the workers, the public, and the environment from the actual hazards identified for the specific work activities of the River Protection Project Waste Treatment Plant Contractor. (Also see the definition for "requirements.") The recommended set serves as a basis for DOE review and approval by the Safety Regulation Official and the issuance of the Safety Requirements Document.

control strategy: A set of generally described provisions (barriers, dilution/dispersal, physical limitations on material quantities, administrative material controls, confinement, ventilation of flammable gas, etc.) and/or approaches (defense in depth, use of passive features, prevention, mitigation, etc.) which are intended to ensure adequate control of a specific hazard and associated accidents in the context of the work.

controlled area: The physical area enclosing the facility by a common perimeter (security fence). Access to this area can be controlled by the Contractor. The controlled area may include identified restricted areas.

Deactivation Safety Evaluation Report: The document approved and issued by the Safety Regulation Official that addresses the adequacy of the authorization basis for deactivation.

defense in depth: The fundamental principle underlying the safety technology of the facility centered on several levels of protection including successive barriers preventing the release of radioactive materials to the workplace or environment. Human aspects of defense in depth are considered to protect the integrity of the barriers, such as quality assurance, administrative controls, safety reviews, operating limits, personnel qualification and training, and safety program. Design provisions, including both those for normal facility systems and those for systems important to safety help to (1) prevent undue challenges to the integrity of the physical barriers; (2) prevent failure of a barrier if it is challenged; (3) where it exists, prevent consequential damage to multiple barriers in series; and (4) mitigate the consequences of

accidents. Defense in depth helps to assure that two basic safety functions (controlling the process flow and confining the radioactive material) are preserved and that radioactive materials do not reach the worker, public, or the environment.

design basis: The information that identifies the specific functions to be performed by structures, systems, or components of the facility and the specific values or ranges of values chosen for controlling parameters as reference bounds for design.

design-basis events: Postulated events providing bounding conditions for establishing the performance requirements of structures, systems, and components that are necessary to (1) ensure the integrity of the safety boundaries protecting the worker; (2) place and maintain the facility in a safe state indefinitely; or (3) prevent or mitigate the event consequences so that the radiological exposures to the general public or the workers would not exceed appropriate limits. The design-basis events also establish the performance requirements of the structures, systems and components whose failure under design-basis event conditions could adversely affect any of the above functions.

documented safety analysis: A documented analysis of the extent to which a nuclear facility can be operated safely with respect to workers, the public, and the environment, including a description of the conditions, safe boundaries, and hazard controls that provide the basis for ensuring safety.

DOE-customer: A DOE employee who has knowledge of the equipment, facilities, and processes necessary for performance by the Contractor of the work activities to deliver the contracted services.

environment, safety, and health standards experts: Individuals with knowledge and expertise relevant to the radiological, nuclear, or process standards and requirements in a particular environment, safety, and health discipline.

facility: Those buildings and equipment directed to a common purpose and those activities and supporting elements occurring at a single location.

Final Safety Evaluation Report: The document approved and issued by the Safety Regulation Official that addresses the adequacy of the authorization basis for operation.

hazard: A source of danger (i.e., material, energy source, or operation) with the potential to cause illness, injury, or death to a person or damage to a facility or to the environment (without regard for the likelihood or credibility of accident scenarios or consequence mitigation).

hazards assessment experts: Individuals with the knowledge, skills, and abilities to identify, based on examination of the work activities defined, the hazards associated with the work activities, as well as the risk to the workers, public, and environment attributable to those hazards.

hazards control experts: Individuals with knowledge, skills, and abilities to identify, based on examination of the work activities and associated hazards, the controls necessary to mitigate the hazards to an acceptable level.

highly hazardous chemical: A substance possessing toxic, reactive, flammable, or explosive properties, which can lead to a catastrophic release.

important to safety: Structures, systems, and components that serve to provide reasonable assurance that the facility can be operated without undue risk to the health and safety of the workers and the public. It encompasses the broad class of facility features addressed (not necessarily explicitly) in the top-level radiological, nuclear, and process safety standards and principles that contribute to the safe operation and protection of workers and the public during all phases and aspects of facility operations (i.e., normal operation as well as accident mitigation).

This definition includes not only those structures, systems, and components that perform safety functions and traditionally have been classified as safety class, safety-related or safety-grade, but also those that place frequent demands on or adversely affect the performance of safety functions if they fail or malfunction, i.e., support systems, subsystems, or components. Thus, these latter structures, systems, and components would be subject to applicable top-level radiological, nuclear, and process safety standards and principles to a degree commensurate with their contribution to risk. In applying this definition, it is recognized that during the early stages of the design effort all significant systems interactions may not be identified and only the traditional interpretation of important to safety, i.e., safety-related may be practical. However, as the design matures and results from risk assessments identify vulnerabilities resulting from non-safety-related equipment, additional structures, systems, and components should be considered for inclusion within this definition.

independent oversight: Authorized oversight by bodies or groups having no financial, programmatic, or other direct interest in the activities or organizations under review and which are totally free of management relationships with those activities or organizations.

independent oversight bodies: Independent oversight bodies are those established organizations that have no financial, programmatic, or other direct interest in and are outside the management structure of the Contractor and the Office of Safety Regulation (OSR). The independent oversight bodies include personnel qualified and skilled to critique, evaluate, and recommend that the safety regulatory oversight provided by the OSR of the Contractor is effective.

Independent Review Team: A group of individuals with the appropriate knowledge and expertise to review the recommended standards set for completeness, credibility, and adequacy before the standards are recommended by the Contractor Representative(s) to the Safety Regulation Official.

Initial Safety Evaluation Report: The document, approved and issued by the Safety Regulation Official, that addresses the capability or potential for obtaining future authorizations for construction, operation, and deactivation.

Integrated Safety Management Plan Evaluation Report: The document, approved and issued by the Safety Regulation Official, that addresses the adequacy of the Contractor's Integrated Safety Management Program as reflected in its Integrated Safety Management Plan.

Integrated Safety Management Program: A set of integrated activities that is directed toward the management or control of radiological, nuclear, and process hazards such that adequate protection is provided to workers, the public, and the environment.

limiting conditions for operations: The limits that represent the lowest functional capability or performance level of important-to-safety structures, systems, and components required for safe operations.

limiting control settings: The settings on important-to-safety systems that control process variables to prevent exceeding a safety limit.

margin of safety: The level of confidence that is assigned to the integrity of radiological control measures such as confinement barriers. It is defined as the range between the design acceptance limits and the design failure point of the control feature. The design acceptance limits for radiological control measures such as confinement barriers are established during the design of the facility. These criteria are given in terms of those physical parameters that define their performance. Whenever the values of the design acceptance limits are exceeded, the margin of safety, and therefore the confidence in the integrity of the control feature, is decreased.

normal operation: Steady-state operation and those departures from steady-state operation that are expected frequently or regularly in the course of facility operation, system testing, and maintenance. It includes conditions such as startup, shutdown, standby, anticipated operational occurrences, operation with specific equipment out of service as permitted by the approved operational constraints, and routine inspection, testing, and maintenance of components and systems during any of these conditions if it is consistent with the approved operational constraints.

Office of Safety Regulation: The organization that executes safety regulatory authority for the River Protection Project Waste Treatment Plant Contractor.

offsite: The area outside the perimeter of the Hanford Site.

onsite: The area within the Hanford Site control perimeter that is under the jurisdiction of the DOE.

operating limits: Those limits required to ensure the safe operation of a nuclear facility, including limiting control settings and limited conditions of operation.

oversight safety determination: The oversight of the Contractor performed by the Office of Safety Regulation to ensure continuing compliance to an authorization agreement.

postulated accidents: Events, including the design-basis events, that would have an adverse affect on the facility process but which do not have a significant probability of occurrence during the life of the facility and include, but are not limited to, pipe or tank failures.

Preliminary Safety Evaluation Report: The document, approved and issued by the Safety Regulation Official, that addresses the adequacy of the authorization basis for construction.

process: Any activity involving a highly hazardous chemical including use, storage, manufacturing, handling, or the onsite movement of such chemicals, or a combination of these activities.

process manager: A person, designated by the Contractor Representative(s), responsible for ensuring that the process steps are accomplished.

Process Management Team: A group of individuals designated by the Contractor Representative(s) to approve specified actions proposed by the process manager and to monitor their implementation.

process safety: The operation of facilities that handle, use, process, or store chemicals or hazardous materials in a manner free of episodic or catastrophic releases. However, the handling, use, processing, and storage of chemicals or materials with inherent hazardous properties can never be done in the total absence of risk. Process safety is an ideal condition towards which one strives.

process safety management: The application of management systems to the identification, understanding, and control of process hazards to prevent process-related injuries and incidents.

public: Individuals who are not occupationally engaged at the Hanford Site.

radiation worker: A worker who has qualifications and training to work in a restricted area of the facility where radiation or radioactive material is present.

reliability targets: Quantified probabilistic expectations that a component, equipment, or system will perform its intended function satisfactorily under given circumstances, such as environmental conditions, limitations as to operation time, and frequency and thoroughness of maintenance for a specified period of time. Identified important-to-safety items are expected to perform their function satisfactorily through all design basis accident conditions.

requirements: Standards that are mandated by an authority through statute, regulation, or contract.

restricted area: An area identified by the Contractor to which access is limited for the purposes of protecting individuals against undue risk from exposure to radiation and radioactive materials. Only a radiation worker is allowed into this area.

risk analysis: The development of a qualitative or quantitative estimate of risk based on engineering evaluation and techniques for considering estimates of incident consequences and frequency.

safe state: A situation in which the facility process has been rendered safe and no pressurized material flow occurs in the process lines. Any active, energy generating, process reactions are in controlled or passive equipment. The structures, systems, and components necessary to reach and maintain this condition are functioning in a stable manner, with all process parameters within normal safe state ranges.

Safety Analysis Report: A document that fully describes the analyzed safety basis for the facility (safety envelope), fully demonstrates that the facility will perform and will be operated such that radiological, nuclear, and process safety requirements are met, and fully demonstrates adequate protection of the public, the workers, and the environment.

safety assurance: Established confidence that adequate protection of worker and public health and safety have been provided.

safety basis: The combination of information relating to the control of hazards at a nuclear facility (including design, engineering analyses, and administrative controls) upon which the DOE depends for its conclusion that activities at the facility can be conducted safely.

safety function: Any function that is necessary to ensure (1) the integrity of the boundaries retaining the radioactive materials, (2) the capability to place and maintain the facility in a safe state, or (3) the capability to prevent or mitigate the consequences of facility conditions that could result in radiological exposures to the general public or workers in excess of appropriate limits.

safety limits: Limits on process variables associated with those physical barriers, generally passive, that are necessary for the intended facility safety functions and that are found to be required to prevent release of unacceptable levels of radioactive material to workers or the general public.

Safety Regulation Official: An individual who has been delegated the authority to execute the radiological, nuclear, and process safety regulation of the River Protection Project Waste Treatment Plant Contractor.

Safety Requirements Document: A document that contains the approved and mandated set of radiological, nuclear, and process safety standards and requirements which, if implemented, provides adequate protection of workers, the public, and the environment against the hazards associated with the operation of the Contractor's facilities.

Safety Requirements Document Evaluation Report: The document approved and issued by the Safety Regulation Official that addresses the adequacy of the set of radiological, nuclear, and process safety standards that a Contractor proposes to implement to ensure adequate protection of worker and public health and safety.

safety setpoints: Physical parameters set in the control equipment by an operator for equipment that controls the process or process flow to maintain the process within the systems design safety limits. A safety setpoint represents a process characteristic, such as pressure, temperature, or material level, that is monitored by a control system to restrict the process characteristic within a system's design operating range. These setpoints are identified in the design as levels above which a process physical parameter would exceed a design operating range of a process component or system leading to its failure and risk to the safety of the worker, public, or the environment. Several setpoints may be used to initiate alarm levels or control the process to a safe state.

significantly new safety information: Either (1) a safety requirement newly mandated by the Office of Safety Regulation, (2) a safety item newly identified by the Contractor as an item not included in the Safety Analysis Report for the facility; or (3) a determination that an unresolved safety question exists.

stakeholder: Any individual other than federal employees or DOE contractor employees who will be materially affected by, or can materially affect, the outcome of the work, either favorably or unfavorably.

standards: The expressed expectation for the performance of work.

state-of-the-art human factors: The most effective design approaches established for use at the start of the final design phase.

technical safety requirements: The limits, controls, and related actions that establish the specific parameters and requisite actions for the safe operation of a nuclear facility and include, as appropriate for the work and hazards identified in the documented safety analysis for the facility: safety limits, operating limits, surveillance requirements, administrative and management controls, use and application provisions, and design features, as well as a bases appendix.

Unreviewed Safety Question: A situation where (1) the probability of the occurrence or the consequences of an accident or the malfunction of equipment important to safety previously evaluated in the documented safety analyses could be increased; (2) the possibility of an accident or malfunction of a different type than any evaluated previously in the documented safety analyses could be created; (3) a margin of safety could be reduced; or (4) the documented safety analysis may not be bounding or may be otherwise inadequate. (Also see definition for "margin of safety.")

work: Functional description of a set of activities (e.g., process operations) that will produce the intended outcome or objective (such as achieving a mission in terms of specified functional requirements).

worker: Worker means an individual within the controlled area of the facility performing work for or in conjunction with the Contractor or utilizing Contractor facilities.

work activities: All activities associated with performing the work, including design, construction, operation, and deactivation.

work activity experts: Individuals with knowledge and expertise relevant to the work, site, and activities addressed by the standards set.